gdalraster

Overview

`gdalraster` is an R interface to the Raster API of the Geospatial Data Abstraction Library (GDAL). Calling signatures resemble those of the native C, C++ and Python APIs provided by the GDAL project.

Bindings to GDAL are implemented in class `GDALRaster` along with several related stand-alone functions. These support:

- manual creation of uninitialized raster datasets
- creation from existing raster as template
- read/set raster dataset parameters
- low-level I/O
- virtual raster (VRT) for virtual subsetting, resampling and kernel filtering
- access to `gdalwarp` utility for reprojection
- coordinate transformation
- spatial reference convenience functions

Additional functionality includes:

- class `RunningStats` calculates mean and variance in one pass, and tracks the min, max, sum, and count (i.e., summary statistics on a data stream). The input data values are not stored in memory, so this class can be used to compute statistics for very large data streams.
- class `CmbTable` identifies and counts unique combinations of integer values using a hash table.
- `combine()` overlays multiple rasters so that a unique ID is assigned to each unique combination of input values. Pixel counts for each unique combination are obtained, and combination IDs are optionally written to an output raster.
- `calc()` evaluates an R expression for each pixel in a raster layer or stack of layers. Individual pixel coordinates are available as variables in the R expression, as either x/y in the raster projected coordinate system or inverse projected longitude/latitude.

`gdalraster` may be suitable for applications that primarily need low-level raster I/O or prefer native GDAL-like calling. The additional functionality is somewhat aimed at thematic data analysis but may have other utility.

Installation

```
# Install the released version from CRAN
install.packages("gdalraster")

# Or the development version from GitHub:
# install.packages("pak")
pak::pak("USDAForestService/gdalraster")
```

Documentation

https://usdaforestservice.github.io/gdalraster/reference/